

Technical Proficiency: 9 credits with at least one course from each of the required three areas.

Mathematics/Statistics

In addition to Math/Statistics courses at a 200 level or above, the following would qualify:

COM ARTS 361: Introduction to Quantitative Research in Communication I, SS 3 credits

Prerequisites: COM ARTS 260

Course Description: An introduction to social science research methods and statistical analyses applicable to the study of communication research and mass media effects.

GEN BUS 303: Business Statistics I 3 credits

Prerequisites: 1 sem Calculus; Jr st.

Course Description: Data collection, data structures in a business setting, frequency tables and plots, descriptive statistics, correlation tables and regression formulation, normal and binomial distributions, quality, surveys.

POLI SCI 551: Quantitative Analysis of Political Data I or II or SS (Cross-listed with Pub Affr.)
3-4 credits

Prerequisites: So st.

Course Description: Basic statistics course intended to provide students skills essential to read quantitative literature in Political Science and use basic empirical analyses. Fundamentals of probability theory and statistical inference up through bivariate regression and correlation.

PSYCH 210: Psychometric Methods I, II, SS 3 credits

Prerequisites: May be taken in conj. with PSYCH 201, 202, or 281; Open to Fr.

Course Description: Measures of central tendency, variability; probability, sampling distributions; hypothesis testing, confidence intervals; t-tests; Chi-square; regression and correlation (linear) and introduction to analysis of variance (1-way).

SOC 357: Methods of Sociological Inquiry (Cross-listed with C & E SOC 357) 3 credits

Prerequisites: Sophomore standing; not open to students who have taken SOC 358

Course Description: Scientific methods and their application in the analysis of society; procedures in testing sociological theory: problem definition, hypothesis construction, collection and evaluation of data.

SOC 360: Statistics for Sociologists (Cross-listed with C & E SOC 360) 4 credits

Prerequisites: Sophomore standing

Course Description: Presentation of sociological data; descriptive statistics; probability theory and statistical inference; estimation and tests of hypotheses; regression and correlation and the analysis of contingency tables; lectures and lab.

Computer Science

BUS 371: Technology of Computer Based Business Systems (Cross-listed with COMP SCI 371)
3 credits

Prerequisites: COMP SCI 302 or cons inst.

Course Description: Overview of computers: their attendant technology, and the implications of this technology for large-scale, computer-based information systems. Topics include hardware, system software, program development, files and data communications.

CBE 255: Introduction to Chemical Process Modeling 3 credits

Prerequisites: Math 319 or 310, or concurrent enrollment

Course Description: Introduction to modeling of chemical processes and introduction to using modern computational tools to analyze the models.

COMP SCI 200: Programming I 3 credits

Prerequisites: Satisfied Quantitative Reasoning (QR) A requirement.

Course Description: Intended for students who have no prior programming experience. Students taking this course will be taught the process of incrementally developing small (200-500 lines) programs along with the fundamental Computer Science topics.

COMP SCI 252: Introduction to Computer Engineering 2 credits

Prerequisites: None

Course Description: Logic components built with transistors, rudimentary Boolean algebra, basic combinational logic design, basic synchronous sequential logic design, basic computer organization and design, introductory machine-and assembly-language programming.

COMP SCI 270: Fundamentals of Human-Computer Interaction 3 credits

Prerequisites: None

Course Description: User-centered software design including principles and methods for understanding user needs, designing and prototyping interface solutions, and evaluating their usability covered through lectures, hands-on in-class activities, and weeklong assignments. Meets with CS 570.

COMP SCI 300: Programming II 3 credits

Prerequisites: Satisfied Quantitative Reasoning (QR) A requirement and COMP SCI 200, COMP SCI 301, COMP SCI 302, COMP SCI 310, or (COMP SCI/ECE 252 and ECE 203)

Course Description: Introduces students to Object-Oriented Programming using classes and objects to solve more complex problems. The course also introduces array-based and linked data structures: including lists, stacks, and queues. Programming assignments require writing and developing multi-class (file) programs using interfaces, generics, and exception handling to solve challenging real world problems.

COMP SCI 301: Introduction to Data Programming. 3 credits

Prerequisites: None

Course Description: Programming skills are in demand across a wide variety of fields. Students and professionals are reaping increasing benefits from the ability to automate tasks, deconstruct problems logically, and deal with increasingly large datasets. CS 301, Introduction to Data Programming, aims to teach these skills to students who may not otherwise want to major in computer sciences by offering a slower-paced and more applications-focused introduction to programming than our popular CS 302 course.

COMP SCI 302: Introduction to Programming. 3 credits

Prerequisites: Problem-solving skills such as those acquired in Stats, Logic, or Adv. HS Algebra course, or cons inst. Open to Fr.

Course Description: Instruction and experience in the use of an object-oriented program language. Program design; development of good programming style; preparation for other computer science courses.

COMP SCI 310: Problem Solving Using Computers. 3 credits

Prerequisites: Math 222

Course Description: Gives engineering students an introduction to computer and analytical skills to use in their subsequent course work and professional development. Discusses several methods of using computers to solve problems, including elementary Fortran and C programming techniques, the use of spreadsheets, symbolic manipulation languages, and software packages. Techniques will be illustrated using sample problems drawn from elementary engineering. Emphasis on introduction of algorithms with the use of specific tools to illustrate the methods.

L SC COM 532: Web Design for the Sciences 3 credits

Prerequisites: L Sc Com 111 or 130

Course Description: This class gives students an opportunity to design websites that focus on agricultural, life and social sciences. It covers characteristics of web users, science information goals for websites, needs assessment, search strategies, formative evaluations, legal issues.

Note: LSC 532 can be used as either a computer proficiency course or a EPD/TC elective, but it cannot be used as both.

Management/Economics/Business

A A E 374: The Growth and Development of Nations in the Global Economy 3 credits

Prerequisites: Econ 101 or 102; AAE 215, equiv.

Course Description: This course explores the roles of markets, states, and civil institutions, using economic theory, computer simulations, and historical experience to better understand the forces that shape the wealth and well-being of nations and people around the world. (Fall)

CIV ENGR 491: Legal Aspects of Engineering 3 credits

Prerequisites: Sr st or cons inst

Course Description: principles and institutions germane to engineering practice; formation and performance of engineer-client and owner-contractor relationships; preparation of technical specifications; surety bonds and insurance; construction liens; contract administration; construction contract remedies; intellectual property of engineers; engineers' obligations to society and their fellow engineers. (Fall/Spring)

CIV ENGR 492: Integrated Project Estimating and Scheduling 3 credits

Prerequisites: Jr st

Course Description: Principles of estimating and scheduling for the construction industry, engineer's preliminary and final estimates' quantity take offs and cost and duration determinations for major items related to a construction project; use manual and computer techniques. (Spring)

CIV ENGR 494: Civil and Environmental Engineering Decision Making 3 credits

Prerequisites: Math 221 or cons inst

Course Description: Planning, designing, and managing civil engineering systems. Fundamentals of the systems approach; marginal analysis; optimization techniques; decision analysis; economic analysis; cost-effectiveness analysis. Case study applications. (Fall/Spring)

CIV ENGR 498: Construction Project Management 3 credits

Prerequisites: Jr st or cons inst

Course Description: Characteristics of Construction Industry; project organizations; the design and construction process; labor, material, and equipment utilization; cost estimation; construction pricing and contracting; construction planning; cost control, monitoring accounting; and management systems construction. (Fall/Spring)

CIV ENGR 570: Environmental Impact of Transportation Systems 3 credits

Prerequisites: Jr st or cons inst

Course Description: Nature of the ecosystem and ecosystem modeling, the nature of transportation produced impacts on man's social, economic, physical and emotional well being, on wildlife, natural areas, agricultural areas; environmental economics; measuring and evaluating environmental quality, and citizen tactics in response to environmental issues.

ECON 301: Intermediate Microeconomic Theory 4 credits

Prerequisites: Any two intro econ courses and one semester calc (Math 221 or 211; Math 221 recommended)

Course Description: Contemporary theory of consumption, production, pricing and resource allocation. (Fall/Spring/Summer)

ECON 302: Intermediate Macroeconomic Theory 4 credits

Prerequisites: Any two intro econ courses and one semester calc (Math 221 or 211; Math 221 recommended)

Course Description: Principles and theories of national income determination, analysis of savings, consumption, investment and other aggregates in the national and international economy and relation to employment, inflation and stabilization. (Fall/Spring/Summer)

ECON 343: Environmental Economics 3-4 credits

Prerequisites: Econ 101 or equiv, or cons inst

Course Description: Microeconomic principles underlying the use of natural resources such as air, water, forests, fisheries, minerals and energy. These principles are applied in the examination of pollution control, preservation vs. development, deforestation, and other environmental issues. (Spring)

ECON 467: International Industrial Organizations 3 credits

Prerequisites: Econ 301 or cons inst

Course Description: Study of competition among firms in an international environment (theoretical analysis and policy applications). Topics include: strategic trade, trade agreements and intellectual property rights issues, R&D and technology transfers, multinational firms. (Fall/Spring/Summer)

F&W ECOL 590: Integrated Resource Management 3 credits

Course Description: Resource management planning in state and federal land management agencies. Students apply principles by working in teams to develop a management plan for a real property by inventorying resources; developing management objectives and alternatives; and analyzing their ecological, social and institutional implications. (Fall)

GEN BUS 301: Business Law 3 credits

Prerequisites: Jr or Sr st

Course Description: History of legal development, contracts, agency, sale of goods, insurance. (Fall/Spring)

GEN BUS 302: Business Organizations and Negotiable Instruments 3 credits

Prerequisites: Jr or Sr st; Gen Bus 301

Course Description: Commercial paper, real estate and personal property, partnerships, corporations, bankruptcy. (Fall/Spring)

GEN BUS 365: Contemporary Topics 1-3 credits

Prerequisites: Prerequisite varies by topic

Course Description: A course for the exploration of subject areas possibly to be introduced into the business curriculum. (Fall/Spring/Summer)

GEN BUS 601: Systems Thinking and Sustainable Businesses 3 credits

Prerequisites: Admitted bus student with Jr or Sr st or enviro studies student

Course Description: Introduces students to the concept of systems thinking so as to allow them to use systems to bring about large scale social change, both within the business community and within our societal infrastructure. (Spring)

INTL BUS 200: International Business 3 credits

Prerequisites: Econ 101 or 102

Course Description: A survey of the interrelationships of world business operations; an introduction to current conceptual perspectives; cultural, educational, political and economic constraints, the international financial and trade frameworks, and the problems and challenges facing the multinational corporation. (Fall/Spring)

INTL BUS 320: Intercultural Communication in Business 3 credits

Prerequisites: So st

Course Description: Develops awareness and knowledge of cultural influences on business. Focuses on various attitudes toward work, time, material possession, business, and the relationship of these attitudes to different social, religious, philosophical, and educational backgrounds of business people from cultures around the world. (Fall)

I SY E 313: Engineering Economic Analysis 3 credits

Prerequisites: So st

Course Description: Financial accounting principles and cost systems, interpretation and use of accounting reports and supplemental information for engineering economic analyses, consideration of cost-volume-profit analyses, use of discounted cash flow techniques, flexible budgeting, transfer pricing, and capital budgeting. (Fall/Spring)

I SY E 349: Introduction to Human Factors 3 credits

Prerequisites: Intro probability or statistics

Course Description: Design for people-machine interaction, including an introduction to the relevant underlying human sciences. Theory, data, and measurement problems in human information processing, anthropometry, training and industrial safety. Laboratories, discussions, and a design project. (Fall/Spring)

I SY E 476: Industrial Engineering Projects 3 credits

Prerequisites: Ind Engr 320, 321, 349; EPD 397; or cons inst

Course Description: Complete design of an industrial engineering system in a real world setting, e.g., manufacturing, hospital, communications, food processing, distribution, transportation, etc. (Fall/Spring)

I SY E 515: Engineering Management of Continuous Process Improvement 3 credits

Prerequisites: EPD 397 & Sr or Grad st, or cons inst

Course Description: This course addresses the role of the industrial engineer as a "manager" of continuous improvement in design and production processes. It provides modern tools and techniques for planning and managing team projects, integrating the concepts of total quality, data based decision making, and resource management. (Fall)

ISY E 575: Introduction Quality Engineer 3 credits

Prerequisites: One intro course in statistical methods, or cons inst

Course Description: Introduction to statistically based quality improvement methods useful in industrial settings; observational methods and design of experiments; experimentation to discover influential factors and to analyze sources of variation; robust products. There will be a one hour discussion section each week. (Fall)

I SY E 652: Sociotechnical Systems 3 credits

Prerequisites: Grad st or IE 349

Course Description: Sociotechnical systems theory with applications to the design of organizations and jobs. Open systems and organizational environments. Analysis of the technical and social systems and techniques for "whole" system consideration. Organizational design strategy. Field site analyses by student teams. (Fall)

I SY E 658: Managing Technological Change in Manufacturing Systems 3 credits

Prerequisites: Bus 753, IE 315, or cons inst. Stdts may not take both IE 658 & Bus 758 for cr

Course Description: Overview of computerized manufacturing technologies and their managerial implications: Manufacturing systems; Manufacturing planning and control; Integration aspects; Performance measures; Adoption considerations; Human aspects and implementation issues. (Fall)

MARKETNG 300: Marketing Management 3 credits

Prerequisites: So, Jr or Sr st; Econ 101

Course Description: Planning and controlling the elements of the marketing program; marketing organization, product and service, packaging, pricing, promotion and physical distribution. (Fall/Spring/Summer)

MARKETNG 310: Marketing Research 3 credits

Prerequisites: So, Jr, or Sr st; Marketing 300; Gen Bus 303 or equiv

Course Description: Systematic and objective search for and analysis of information relevant to the identification and solution of problems in marketing. (Fall/Spring/Summer)

MARKETNG 415: Marketing Communications 3 Credits

Prerequisites: So, Jr, or Sr st; Marketing 300

Course Description: Decision making in the management of communications between the firm and the public. Communications theories, advertising and promotional management. An evaluation of the promotional mix, i.e. personal selling, advertising media, packaging, sales promotion and publicity. (Fall/Spring)

MARKETNG 420: Global Marketing Strategy 3 credits

Prerequisites: So, Jr or Sr st; Marketing 300

Course Description: Structure of foreign trading; commercial facilities available to exporters and importers; application of economic analysis in marketing decisions; contemporary trends in international economy affecting foreign trade policies and practices. (Fall/Spring)

ME 314: Manufacturing Fundamentals 3 credits

Prerequisites: Stat 224 & ME 313 or cons inst

Course Description: An introduction to techniques for modeling in materials processing and improving decision making in increasing the productivity of design and manufacturing processes. Quality improvement and engineering simulation tools are presented as well as the methods of engineering economy and the role of manufacturing automation and systems, through lectures and laboratories. (Fall/Spring)

M E 549: Product Design 3 credits

Prerequisites or Corequisites: Sr or Grad st in engr or Grad st in other college or cons inst

Course Description: A project oriented, interdisciplinary course with an emphasis on designing competitive, quality products. The product development process is covered from problem identification through detail design and evaluation. Included among the topics covered are: idea generation and evaluation, visualization, and quality.

M H R 300: Organizational Behavior 3 credits

Prerequisites: So st (not open to Grad students)

Course Description: Attitudes and behavior within organizations. Satisfaction, performance, and job choice; models of organizational behavior and attitudes; use of the models to demonstrate how individual, group, and organizational characteristics influence attitudes and behavior. Implications for supervisory practice. (Fall/Spring/Summer)

M H R 365: Contemporary Topics 3 credits

Prerequisites: So, Jr or Sr st; cons inst. Not open to grad students. Prerequisite varies by topic.

Course Description: A course for the exploration of subject areas possibly to be introduced into the business curriculum.

M H R 420: Managing Change and Organizational Effectiveness 3 credits

Prerequisites: So, Jr or Sr st; MHR 300. Not open to grad students

Course Description: How large and complex organizations are structured, and basic managerial processes within organizations. Topics: Classical bureaucratic structure contrasted with contemporary organization structure; the impact of different organizational goals and environments on the structure of organizations; planning, coordination and control processes as related to different service and production technologies. (Fall/Spring)

M H R 612: Labor-Management Relations 3 credits

Prerequisites: Jr or Sr st; MHR 305 or 705. Open to grad students

Course Description: Labor-management relations at the firm level including its evolution, characteristics and contemporary issues. Emphasis on analysis of the labor-management relationship through reference to theory and research on collective action, bargaining behavior and conflict resolution. (Fall/Spring)

N E 571: Economic and Environmental Aspects of Nuclear Energy 3 credits

Prerequisites: NEEP 405 & NEEP 411

Course Description: Economics of the nuclear fuel cycle. Economic and environmental impact the nuclear fuel cycle. Impact on design, plant siting and regulation. (Spring)

OTM 365: Contemporary Topics 3 credits

Prerequisites: Prerequisite varies by topic

Course Description: A course for the exploration of subject areas possibly to be introduced into the business curriculum. (Fall/Spring)

R M I 300: Principles of Risk Management 3 credits

Prerequisites: Econ 101 or equiv or Econ 111 (not open to Grad students)

Course Description: Precedes advanced work in insurance; the nature of risk, principal techniques of risk management and the bases for decision making in management of business and personal risks. (Fall/Spring)